



PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference BP109937a	FOR FURTHER ACTION		See Form PCT/PEA416
International application No. PCT/FI2004/000476	International filing date (day/month/year) 13.08.2004	Priority date (day/month/year) 15.08.2003	
International Patent Classification (IPC) or national classification and IPC C08J3/09, D21C3/20, C08J3/28			
Applicant KEMIRA OYJ et al.			
1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36. 2. This REPORT consists of a total of 5 sheets, including this cover sheet. 3. This report is also accompanied by ANNEXES, comprising: a. <input type="checkbox"/> sent to the applicant and to the International Bureau a total of sheets, as follows: <input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions). <input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box. b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).			
4. This report contains indications relating to the following items: <input checked="" type="checkbox"/> Box No. I Basis of the opinion <input type="checkbox"/> Box No. II Priority <input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability <input type="checkbox"/> Box No. IV Lack of unity of invention <input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement <input type="checkbox"/> Box No. VI Certain documents cited <input type="checkbox"/> Box No. VII Certain defects in the international application <input type="checkbox"/> Box No. VIII Certain observations on the international application			
Date of submission of the demand 14.06.2005	Date of completion of this report 22.09.2005		
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer West, N Telephone No. +49 89 2399-7582 		

**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

 International application No.
PCT/FI2004/000476

IAP20 Rec'd PCT/PTO 15 FEB 2006

Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
 - ☐ This report is based on translations from the original language into the following language, which is the language of a translation furnished for the purposes of:
 - ☐ international search (under Rules 12.3 and 23.1(b))
 - ☐ publication of the international application (under Rule 12.4)
 - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements*** of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):

Description, Pages

1-14 as originally filed

Claims, Numbers

1-22 as originally filed

☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/figs
- ☐ the sequence listing (*specify*):
- ☐ any table(s) related to sequence listing (*specify*):

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/figs
- ☐ the sequence listing (*specify*):
- ☐ any table(s) related to sequence listing (*specify*):

* If item 4 applies, some or all of these sheets may be marked "superseded."

**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/FI2004/000476

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-8,12-22
	No: Claims	9-11
Inventive step (IS)	Yes: Claims	
	No: Claims	1-22
Industrial applicability (IA)	Yes: Claims	1-22
	No: Claims	

2. Citations and explanations (Rule 70.7):

see separate sheet

**INTERNATIONAL PRELIMINARY
REPORT ON PATENTABILITY
(SEPARATE SHEET)**

PCT/FI2004/000476

Reference is made to the following documents (D):

- D1:** [Online] XP002306091 Retrieved from the Internet:
URL: <http://bama.ua.edu/~rdrogers/sandiego/> > [retrieved on 2001-04]
- D2:** WO 03/029329 A (PG RES FOUNDATION INC ; UNIV ALABAMA (US)) 10
April 2003 (2003-04-10)
- D3:** US-A-4 000 032 (BERGSTROM JOHN RICKARD ET AL) 28 December 1976
(1976-12-28)

Re Item V

**Reasoned statement with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement**

1. Novelty:

None of the documents available disclose dissolving lignocellulosic material in the presence of an ionic solvent and with the help of either pressure or microwaves. Consequently, the subject-matter of present claims 1-8 and 12-22 is novel.

Document **D1** discloses the dissolution (at least the partial dissolution) of lignocellulosic material with the help of ionic solvents.

While it is true that the title is worded "biomass derivatives", the abstract as such discloses the treatment of "lignocellulosic biomass" (derivatives omitted), which thus implies that not only is it highly probable, but also unambiguously derivable, that the dissolution of natural untreated lignocellulosic material is likewise disclosed in **D1**.

Since it is in the resulting solution not detectable whether microwave or pressure has been applied in the dissolution step, the subject-matter of present claims 9-11 is not novel with respect to **D1** (Article 33(2) PCT).

2. Inventive step:

Document **D1** is considered to represent the closest prior art.

The differentiating feature between the subject-matter as presently claimed and the

disclosures of **D1** is, that the present application claims the application of either pressure or microwave radiation during the dissolution step.

The objective problem must, however, be regarded as merely providing an alternative, since the applicant has not shown that this additional step is in any way useful, or even necessary.

In order to state an objective problem other than an alternative, the application as originally filed ought to have contained comparative examples clearly proving that the additional application of pressure and/or microwave radiation leads to an unexpected technical effect.

The person skilled in the art, attempting to solve this problem, was however, aware from document **D2** that microwaves in combination with ionic solvents is beneficial for the dissolution of cellulose, and furthermore, from document **D3** that the application of microwaves was also beneficial for the dissolution of lignocellulosic materials.

Consequently, it would have been obvious for the person skilled in the art, when attempting to find an alternative dissolution method, to investigate the applicability of microwaves when dissolving lignocellulosic materials with ionic solvents, especially since the person skilled in the art was merely looking for an alternative process, and furthermore even the an incentive from **D3** to apply microwave radiation.

Therefore, and especially due to the absence of appropriate comparative tests, the subject-matter of present claims 1-22 does not involve the presence of an inventive step (Article 33(3) PCT).